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भारतीय मानक

हाइड्रोलिक द्रव पावर — एक रॉड सिलिंडर, 16 मेगापास्कल (160 बार) मध्यम और 25 मेगापास्कल (250 बार) श्रृंखला — छूट

(पहला पुनरीक्षण)

Indian Standard

HYDRAULIC FLUID POWER — SINGLE ROD CYLINDERS, 16 MPa (160 bar) MEDIUM AND 25 MPa (250 bar) SERIES — TOLERANCES

(First Revision)

ICS 23.100.20

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BUREAU OF INDIAN STANDARDS
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

March 2005 **Price Group 2**

Hydraulic Fluid Power Systems Sectional Committee, MGP 15

NATIONAL FOREWORD

This Indian Standard (First Revision) which is identical with ISO 8135 : 1999 'Hydraulic fluid power — Single rod cylinders, 16 MPa (160 bar) medium and 25 MPa (250 bar) series — Tolerances' issued by the International Organization for Standardization (ISO) was adopted by the Bureau of Indian Standards on the recommendations of the Hydraulic Fluid Power Systems Sectional Committee and approval of the Medical Instruments, General and Production Engineering Division Council.

This standard was first published in 1992 by adopting ISO 8135 : 1986. The ISO Standard has since been revised as ISO 8135 : 1999. To align the standard with international practices, the sectional committee, dealing with the subject, decided to revise IS 13434 : 1992 by adopting ISO 8135 : 1999 as Indian Standard under dual numbering system.

In hydraulic fluid power systems, power is transmitted and controlled through a liquid under pressure within an enclosed circuit. One component of such systems is the fluid power cylinder. This is a device which converts power into linear mechanical force and motion. It consists of a movable element, that is, a piston and piston rod, operating within a cylindrical bore.

The text of the ISO Standard has been approved as suitable for publication as an Indian Standard without deviations. Certain conventions are, however, not identical to those used in Indian Standards. Attention is particularly drawn to the following:

a) Wherever the words 'International Standard' appear referring to this standard, they should be read as 'Indian Standard'.

b) Comma (,) has been used as a decimal marker in the International Standard while in Indian Standards, the current practice is to use a point (.) as the decimal marker.

In this adopted standard, reference appears to certain International Standards for which Indian Standards also exist. The corresponding Indian Standards which are to be substituted in their places are listed below along with their degree of equivalence for the editions indicated:

International Standard	*Corresponding Indian Standard*	*Degree of Equivalence*
ISO 4393 : 1978 Fluid power systems and components — Cylinders — Basic series of piston strokes	IS 10411 : 1983 Recommendation on nominal strokes for fluid power cylinders	Technically Equivalent
ISO 5598 : 1985 Fluid power systems and components — Vocabulary	IS 10416 : 1992 Fluid power systems and components — Vocabulary (*first revision*)	Identical
ISO 6020-1 : 1998 Hydraulic fluid power — Mounting dimensions for single rod cylinders, 16 MPa (160 bar) series — Part 1 : Medium series	IS 11003 (Part 1) : 2005 Hydraulic fluid power — Mounting dimensions for single rod cylinders — 16 MPa (160 bar) series: Part 1 Medium series (*first revision*)	do
ISO 6099 : 1985 Fluid power systems and components — Cylinders—Identification code for mounting dimensions and mounting types	IS 15168 : 2002 Fluid power systems and components — Cylinders — Identification code for mounting dimensions and mounting types	do

(*Continued on third cover*)

Indian Standard
HYDRAULIC FLUID POWER — SINGLE ROD CYLINDERS, 16 MPa (160 bar) MEDIUM AND 25 MPa (250 bar) SERIES — TOLERANCES
(First Revision)

1 Scope

This International Standard specifies dimensional tolerances for 16 MPa [160 bar[1]] medium and 25 MPa (250 bar) series cylinders in accordance with ISO 6020-1 and ISO 6022, as required for interchangeability of commonly used hydraulic cylinders

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this International Standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 4393:1978, *Fluid power systems and components — Cylinders — Basic series of piston strokes.*

ISO 5598:1985, *Fluid power systems and components — Vocabulary.*

ISO 6020-1:1998, *Hydraulic fluid power — Mounting dimensions for single rod cylinders, 16 MPa (160 bar) series — Part 1: Medium series.*

ISO 6022:1981, *Hydraulic fluid power — Single rod cylinders — Mounting dimensions — 250 bar (25 000 kPa) series.*

ISO 6099:1985, *Fluid power systems and components — Cylinders — Identification code for mounting dimensions and mounting types.*

3 Definitions

For the purposes of this International Standard, the definitions given in ISO 5598 and the following definitions apply.

3.1
cylinder
device which converts fluid power into linear mechanical force and motion

3.2
cylinder bore
internal diameter of the cylinder

3.3
piston rod
element transmitting mechanical force and motion from the piston

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[1] 1 bar = 0,1 MPa = 10^5 Pa; 1 MPa = 1 N/mm^2.

4 Tolerances

4.1 Tolerances for piston strokes

4.1.1 The nominal strokes shall be selected from the recommended values given in ISO 4393.

4.1.2 The tolerances on piston strokes shall be as given in table 1.

4.2 Tolerances for mounting dimensions

See table 2 for mounting dimension tolerances that are dependent on stroke, and table 3 for mounting dimension tolerances that are independent of stroke.

5 **Identification statement** (reference to this International Standard)

Use the following statement in test reports, catalogues and sales literature when electing to comply with this International Standard:

"Tolerances selected in accordance with ISO 8135:1999, *Hydraulic fluid power — Single rod cylinders, 16 MPa (160 bar) medium and 25 MPa (250 bar) series — Tolerances.*"

Table 1 — Tolerances on piston strokes

Values in millimetres

Nominal stroke	Tolerance
stroke ⩽ 1 250	$^{+2}_{0}$
1 250 < stroke ⩽ 3 150	$^{+5}_{0}$
3 150 < stroke ⩽ 8 000	$^{+8}_{0}$

Table 2 — Mounting dimension tolerances that are dependent on stroke

Values in millimetres

Code for mounting dimensions1)	*Y*	*PJ* 2)	*WF*	*WC*	*W*	*XS*	*SS* 2)	*XC* 2)
Code for mounting types1)	basic	basic	basic	MF3	MF1	MS2	MS2	MP3
Nominal stroke	**Tolerances**							
stroke ≤ 1 250	± 2	± 1,5	± 2	± 2	± 2	± 2	± 1,5	± 1,5
1 250 < stroke ≤ 3 150	± 4	± 3	± 4	± 4	± 4	± 4	± 3	± 3
3 150 < stroke ≤ 8 000	± 8	± 5	± 8	± 8	± 8	± 8	± 5	± 5

Code for mounting dimensions1)	*XD* 2)	*XO* 2)	*XN* 2)	*XV*	*ZJ* 2)	*ZP/ZF* 2)	*ZB* 2)
Code for mounting types1)	MP4	MP5	MP6	MT4	basic	MF2 MF4	MF1 MF3 MF4
Nominal stroke	**Tolerances**						
stroke ≤ 1 250	± 1,5	± 1,5	± 1,5	± 2	± 1,5	± 1,5	max.
1 250 < stroke ≤ 3 150	± 3	± 3	± 3	± 4	± 3	± 3	
3 150 < stroke ≤ 8 000	± 5	± 5	± 5	± 8	± 5	± 5	

1) See ISO 6099

2) Length including stroke. Stroke tolerances from table 1 shall not be added to the tolerances in table 2.

Table 3 — Mounting dimension tolerances that are independent of stroke

Values in millimetres

Code for mounting dimensions1)	*A*	*VE*	*D*	*VD*	*FB*	*B/BA*	*UF*	*TF*	*R*	*E*	*UC*
Code for mounting type1)	basic	basic	basic	MF1 MF3	MF1 MF2 MF3 MF4	MF1 MF2 MF3 MF4	MF1 MF2	MF1 MF2	MF1 MF2	MF1 MF2	MF3 MF4
Tolerances											
	max.	max.	max.	min.	H13	H8/f8	max.	js13	js13	max.	max.

Code for mounting dimensions1)	*CX*	*CD*	*EX/ EW*	*MR/ MS*	*L/LT*	*S*	*SB*	*TS*	*US*	*TE*	*ST*
Code for mounting type1)	MP5 MP6	MP3 MP4	MP3 MP4 MP5 MP6	MP3 MP4 MP5 MP6	MP3 MP4 MP5 MP6	MS2	MS2	MS2	MS2	MS2	MS2
Tolerances											
	H7	H9	h12	max.	min.	js13	H13	js13	max.	js13	max.

Code for mounting dimensions1)	*EH*	*LH*	*TD*	*TL*	*TM*	*FC*	*OH*	*Z*
Code for mounting type1)	MS2	MS2	MT4	MT4	MT4	MF3 MF4	basic	MP5 MP6
Tolerances								
	max.	h10	f8	js13	h14	js13	js17	min.

1) See ISO 6099.

(*Continued from second cover*)

The Technical Committee responsible for the preparation of this standard has reviewed the provisions of the following International Standard and has decided that the same is acceptable for use in conjunction with this standard:

International Standard	*Title*
ISO 6022 : 1981	Hydraulic fluid power — Single rod cylinders — Mounting dimensions — 250 bar (25 000 kPa) series

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Amendments Issued Since Publication

Amend No.	Date of Issue	Text Affected

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